

Two New Records of Hydromedusae (Cnidaria: Hydrozoa) in Korea

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ABSTRACT

Some hydromedusae were collected from the coasts of Seogwipo (Jejudo Island), Hoenggando Island and Ilsanhaesuyokjang (Ulsan), Korea on July 11, 1985; July 23, 1990 and July 16, 1994. They were identified into *Aequorea coerulescens* (Brandt, 1838) of the order Leptomedusae, and *Physalia physalis utriculus* La Martiniere, 1829 of the Siphonophora, respectively. The unique morphological characteristics of *A. coerulescens* are smooth even surface of exumbrella, large mouth with 60 highly fringed oral lobes, shallow stomach, 120 simple radial canals and flat beret-shaped bell. In *P. physalis utriculus* its morphological characteristics are a triangular large pneumatophore with very low or rudimentary crest, a ribbon like long slender main tentacle, siphon-shaped gastrozoid with mouth, finger-shaped dactylozoid and branched gonozoid with gonophores. *P. physalia. utriculus* is the Pacific form and distinguished from the Atlantic form, *P. p. physalis* which has a much larger pneumatophore with high crest, numerous large main tentacles, and compact arrangement of basal and ventral cormidia. As a result of this work the Korean hydromedusan fauna consists of 15 species of five orders.

Key words: taxonomy, hydromedusa, Korea

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INTRODUCTION

The hydromedusa is a stage of the life cycle of hydroids alternating with polyp hydroids, commonly reproduces sexually except for some species, and contributes to species dispersal. The siphonophores form elaborate colonies that swim and drift. There is a cyclical alternation in the preponderance of the polygastric and sexual (eudoxid) stages in their life cycle (Kirkpatrick and Pugh, 1984).

The taxonomic studies on the Korean hydromedusae have so far been done by Park (1996, 1998, 1999, 2001, 2002, 2003) and Lee and Park (2001). By the previous studies 13 species of 11 families in five orders, Anthomedusae (5 species), Leptomedusae (4 species), Limnomedusae (2 species), Trachymedusae (1 species) and Siphonophora (1 species) have been reported from Korean waters.

Some hydromedusae were collected from the coasts of Seogwipo (Jejudo Island), Hoenggando Island and Ilsanhaesuyokjang (Ulsan), Korea on July 11, 1985, July 23, 1990 and July 16, 1994. They were preserved in about 5% neutral formalin, and identified on the basis of the taxonomic morphological characters.

SYSTEMATIC ACCOUNTS

Phylum Cnidaria

Class Hydrozoa

Order Leptomedusae

Family Aequoreidae

*****Aequorea coerulescens* (Brandt, 1838) (Fig. 1A-F)**

Zygodactyla (*Mesonema*) *coerulescens* Brandt, 1838, p. 360, pl. 5.

Aequorea coerulescens: Uchida, 1938, p. 54; Kramp, 1957, p. 40; 1968a, p. 98, fig. 266; 1968b, p. 202; Chow and Huang, 1958, pp. 184, 189, pl. 4, figs. 35-36; Pages et al., 1992, p. 24, fig. 24.

Aequorea forskalea: Mayer, 1910, p. 326, fig. 186.

Material examined. 3 inds., Ilsanhaesuyokjang (Ulsan), 16 Jul. 1994 (J. I. Song).

Description. Umbrella flat beret-shaped, with thick gelatinous center, thinning towards bell margin, our 3 specimens about 60, 80, 150 mm wide respectively, very shallow, transparent except for gonads. Mouth large, about 40 mm wide, with about 60 highly fringed oral lobes as like fimbriated edge, manubrium undiscinated, with stomach which about 70 mm wide, quite shallow. Radial canals simple, unbranched, arising from stomach and extending to bell margin, 120 in number. Marginal tentacles filiform, short or long depending upon their contraction state, with long tapering basal bulb, about 3 between adjacent canals in common. Numerous marginal knobs and statocysts between marginal tentacles. Excretory papillae, conical, placed at bases of marginal

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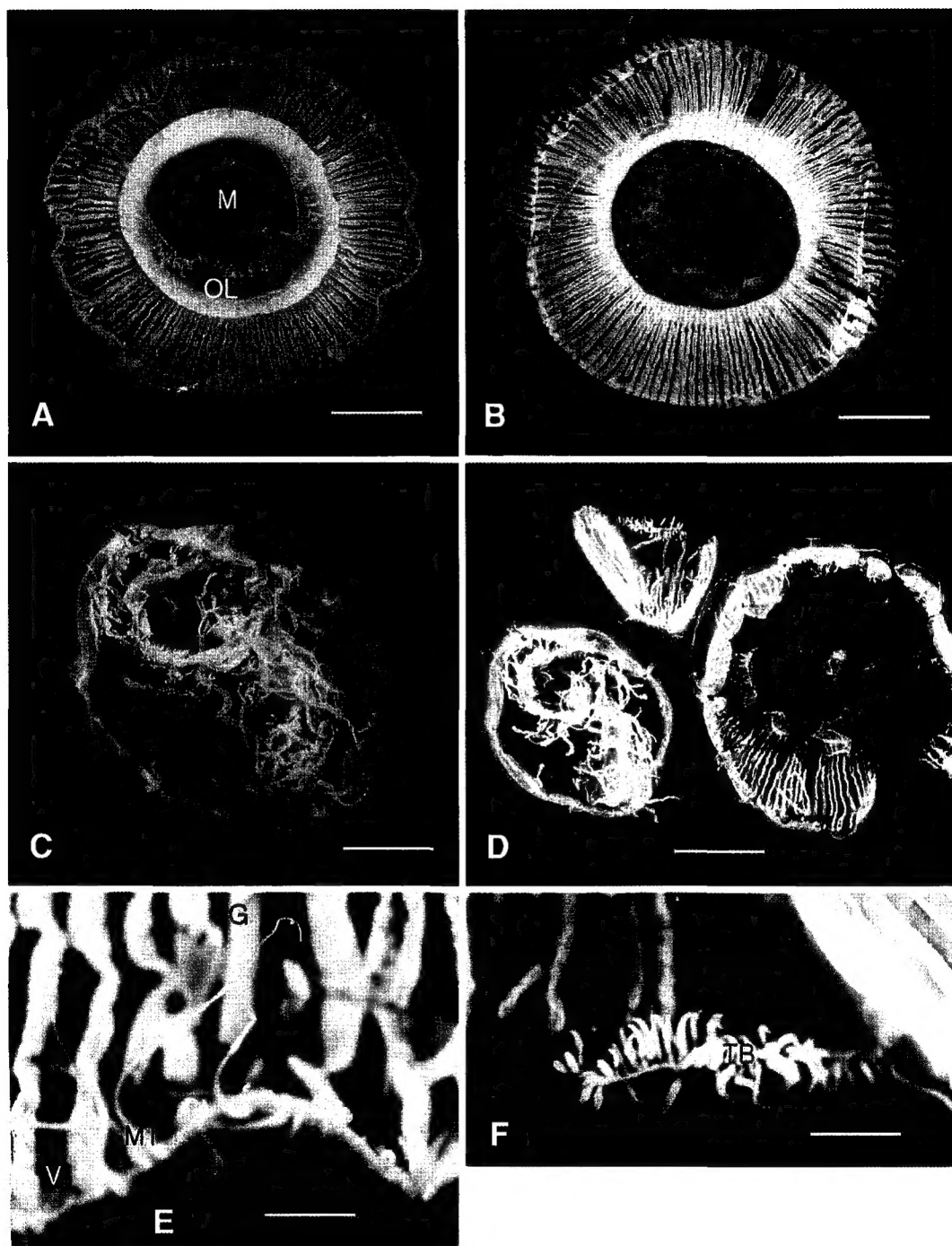


Fig. 1. *Aequorea coerulescens*. A, aboral view (M: mouth, OL: oral lobe); B, oral view; C, enlarged degenerated form showing thick mesoglea and detached gonads; D, degenerated forms; E, marginal tentacles (MT) arranged in single row (V: velum, G: gonad); F, marginal tentacular bulbs (TB) arranged in 2 rows of degenerated form. Scale bars = 3 mm (F), 4 mm (E), 11 mm (D), 25 mm (C), 50 mm (A, B).

tentacles on subumbrellar side, above velum. Velum thin and narrow, about 3 mm wide. Gonads developed along almost whole length of radial canals, bilamellar shaped in common, light orange color in preservation.

Remarks. This species is highly variable in form and color according to growth, regeneration and injury as like as *Aurelia* of the Scyphozoa. Mayer (1910) described this species as *Aequorea forskalea*, and compared it with *Aequorea coerulescens* from off shore of Japan. And then he concluded that *A. forskalea* is apparently identical with *A. coerulescens*. He noted that differences between them in form, color and the number of marginal tentacles are only due to the growth state. We also agree with his opinions. They should be treated as synonym. Of our three specimens the one is the typical mature type of this species, but the other forms are degenerated forms. In which the umbrellas are thicker, their marginal tentacles and other marginal organs and oral lobes are degenerated, their gonads are detached from the radial canals and the retaining tentacular bulbs are arranged in two rows. These degenerated forms are looked as different species from normal type.

Distribution. Korea, Japan (Mutsu Bay and near Shimodo, Konorihama, Sado, Tanabe Bay), China (Chefo), Arctic Ocean (Lofoten Island), off Peru, Chile, Indian Ocean, Falkland Islands, Papua New Guinea, off Ludert Bay (southwestern Africa).

Order Siphonophora

Family *Physaliidae

*****Physalia physalis utriculus* La Martiniere, 1829 (Fig. 2A-D)**

Physalia physalis utriculus: Kawamura, 1954, p. 129.

Material examined. 4 inds., Seogwipo, 11 Jul. 1985 (S. J. Yun); Hoenggando Island, 23 Jul. 1990 (J. H. Park).

Description. Only pleustonic siphonophore, with a relatively triangular small pneumatophore and other organs attached on its basal and ventral sides. Length \times maximum width (cm) range of pneumatophore 3.2-8 \times 2.2-3.8 in specimens from Seogwipo and Hoenggando, Korea, which lies horizontally on sea surface, with longitudinal low or rudimentary crest in mid-lateral line. Basal cormidia placed at base of trunk, with numerous gastrozooids, always without gonozooids and tentacles. Numerous secondary cormidia arising from ventral side, each ventral mature cormidium with a gastrozoid (siphon), a dactylozoid (palpon), a gonozooid (gonodendrium) and a tentacle. A long main tentacle arising from middle of ventral groups, about 10 times more thicker than other smaller tentacles, its diameter at base reached about 8 mm, ribbon-shaped, with cnidoband on its one side which consists of a series of very numerous spherical battery cells, and opposite side smooth. And other tentacles arising from other ventral cormidia, same structure as main one but much smaller. Gastrozooids siphon-shaped, with a mouth at terminal, divided into 3-4 segments, pedicle, basigaster, stomach and proboscis, respectively. Palpons cylindrical or spindle shaped, closed at pointed distal end, intermingled with gastrozooids and gonophores. Gonodendrium richly branched, with spherical stalked gonophores.

Remarks. *P. physalia. utriculus* is the Pacific small form and distinguished from the Atlantic large

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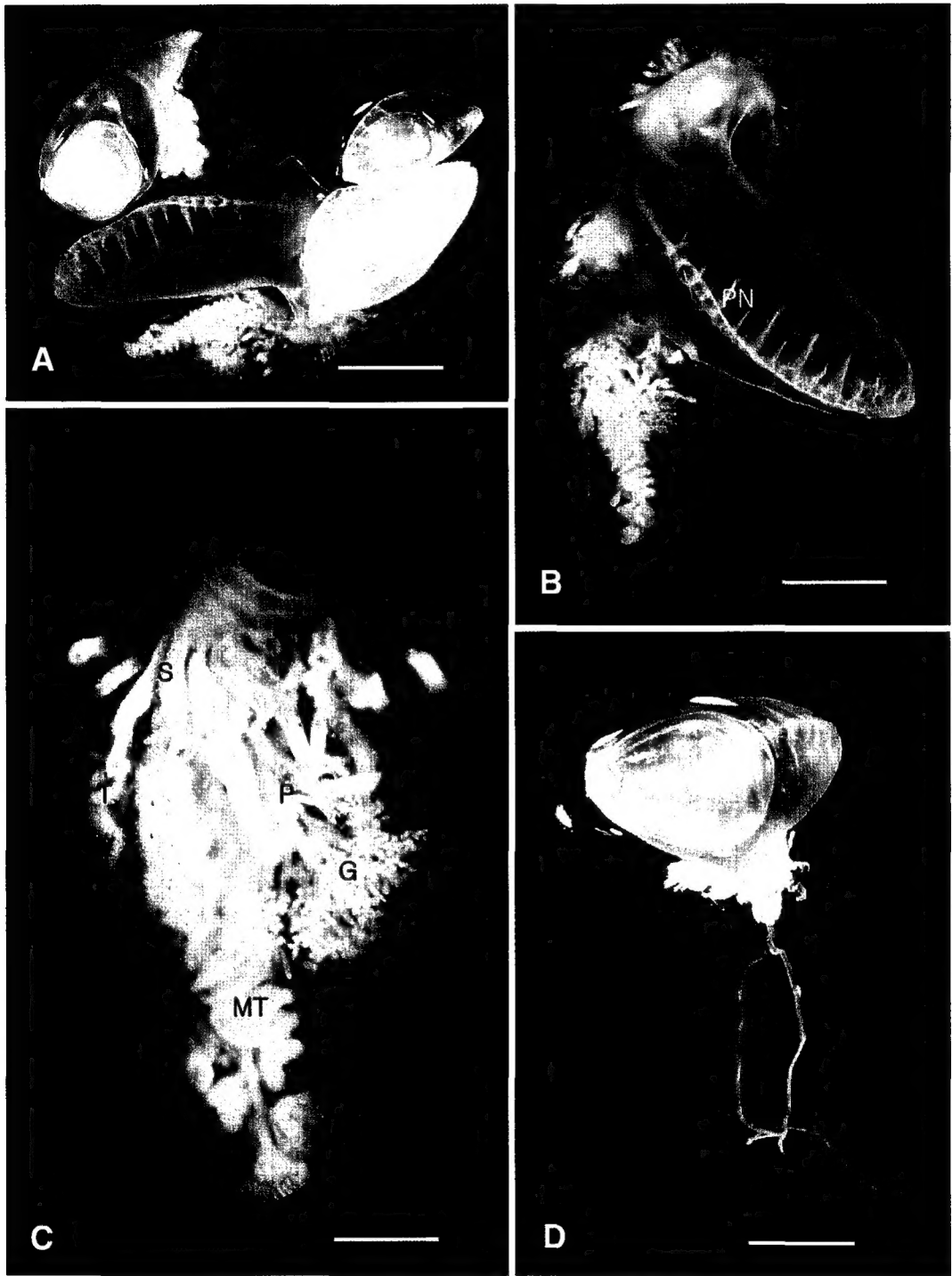


Fig. 2. *Physalia physalis utriculus*. A, 4 siphonophores; B, adult form with large pneumatophore (PN); C, cormidium with siphons (S), small palpons (P), gonodendria (G), a large main tentacle (MT) and other smaller tentacles (T); D, young form. Scale bars = 2 mm (C), 8 mm (B), 13 mm (D), 20 mm (A).

one, *P. physalia physalis* which has a much larger pneumatophore with high crest, numerous large main tentacles, and compact arrangement of basal and ventral cormidia (Kirkpatrick and Pugh, 1984).

Distribution. Warmer Pacific waters (Korea, Japan).

REFERENCES

- Brandt, J. F., 1838. Ausführliche Beschreibung der von C. H. Mertens auf seiner Weltumsegelung beobachteten Schirmqualen. Mem. Acad. Sci. St.-Petersb. Sci. Nat. Ser. 6, **2**: 237-411.
- Chow, T. H. and M. C. Huang, 1958. A study on hydromedusae of Chefoo. Acta Zool. Sin., **10**: 173-197.
- Kawamura, T., 1954. A report on Japanese siphonophores with special references to new and rare species. J. Shiga Prefect. Junior Coll., Ser. A, **2**: 98-136.
- Kirkpatrick, P. A. and P. R. Pugh, 1984. Siphonophores and Velellids. Linn. Soc. Lond., London, pp. 1-154.
- Kramp, P. L., 1957. Hydromedusae of the discovery collections. Discovery Rep., **29**: 1-135.
- Kramp, P. L., 1968a. The hydromedusae of the Pacific and Indian Ocean. Dana Rep., **72**: 1-200.
- Kramp, P. L., 1968b. Medusae in the Peru Current system. Vidensk Medd. Dan. Naturhist. Foren., **131**: 199-208.
- Lee, W. J. and J. H. Park, 2001. Life history of *Obelia bicuspidata* Clarke, 1875 (Hydrozoa, Campanulariidae) in Korea. Korean J. Syst. Zool., **17**(2): 171-177.
- Mayer, A. G., 1910. Medusae of the world. Hydromedusae I, II. Carnegie Inst., Washington: 1-498.
- Pages, F., J.-M. Gilli and J. Bouillon, 1992. Medusae (Hydrozoa, Scyphozoa, Cubozoa) of the Benguela Current (southeastern Atlantic). Sci. Mar., **56**(Supl. 1): 1-64.
- Park, J. H., 1996. Four hydromedusae (Cnidaria: Hydrozoa) from Korean waters. Korean J. Syst. Zool., **12**(1): 67-77.
- Park, J. H., 1998. First record of a freshwater jellyfish, *Craspedacusta sowerbii* Lankester, 1880 (Limnomedusae, Olindiidae) from reservoirs in Korea. Korean J. Biol. Sci., **2**: 303-308.
- Park, J. H., 1999. New records of three hydromedusae (Cnidaria, Hydrozoa) in Korea. Korean J. Syst. Zool., **15**(2): 189-195.
- Park, J. H., 2001. New record of a freshwater hydra and a marine hydromedusa (Cnidaria, hydrozoa) in Korea. Korean J. Syst. Zool., **17**(1): 13-19.
- Park, J. H., 2002. Two new records of Siphonophora (Hydrozoa) and Semaestomeae (Scyphozoa) in Korea. Korean J. Syst. Zool., **18**(1): 53-58.
- Park, J. H., 2003. Two new records of marine hydromedusae (Cnidaria: hydrozoa) in Korea. Korean J. Syst. Zool., **19**(1): 111-117.
- Uchida, T., 1938. Medusae in the Onagawa Bay and its vicinity. J. Sci. Rep. Tohoku Imp. Univ., Sect. 4, Biol., **13**(1): 47-58.

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요 약

서귀포 (제주도), 횡간도 및 일산해수욕장 (울산)에서 1985년 7월 11일, 1990년 7월 23일 1994년 7월 16일에 채집된 히드라해파리류는 평면해파리 (*Aequorea coerulescens*)와 작은부레관해파리 (*Physalia physalis utriculus*)로 각각 동정되었다. 이들은 한국 미기록종으로 판명되어 재기재하여 보고한다. 평면해파리는 외산이 편평한 베레모 모양이고 큰 입을 가지며 60개의 주름진 구엽과 120개의 방사관을 가진다. 작은부레관해파리는 비교적 큰 부유기를 가지고 부유기의 아래에 섭식개충, 지상개충 (=방어개충), 생식개충과 1개의 리본 모양의 큰 주촉수와 많은 작은 촉수를 가진다. 본 연구의 결과 지금까지 밝혀진 한국 해산 히드라해파리류는 5목 13과 15종이 된다.